- 1 1. A method for optimizing response time of physical devices
 2 in a data storage system comprising:
- 3 collecting statistics for each of the physical devices;
- 4 determining from the statistics the n most active of the
- 5 physical devices;
- for each of the n most active of the physical devices,
- 7 adjusting a mirror service policy associated with one or more
- 8 mirrored logical volumes serviced by the physical device to
- reduce seek time.

 1 2. The method
 1 2 utilization and with
 3 utilization of the
 - 2. The method of claim 1, wherein the statistics include utilization and wherein adjusting is performed if the utilization of the physical device is greater than a threshold value.
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- 3. The method of claim 1, wherein adjusting comprises:
- using a cost function analysis to determine that workload
- ₹3 assigned to the one or more selected mirrored logical volumes
 - 4 according to a current mirror service policy can be re-assigned
 - 5 to a corresponding mirrored copy according to a new mirror
 - 6 service policy, the cost function analysis indicative of seek
 - 7 time and involving the selected physical device and any physical
 - 8 device on which a mirrored copy resides.
 - 1 4. The method of claim 3, wherein the physical devices
 - 2 involved in the cost function analysis are physical mirrors.

- The method of claim 3, wherein using comprises: 1 5.
- computing cost functions for each of the physical devices 2
- involved in the cost function analysis and determining a maximum 3
- value from the computed cost functions, based on the current 4
- mirror service policy and the new mirror service policy. 5
- 6. The method of claim 5, wherein using comprises: 1
- 2 determining that the reassignment of workload can be made
- if the maximum value based on the new mirror service policy is 3
- less than the maximum value based on the current policy. 4
- 1 2 3 4 1 2 3 The method of claim 6, wherein adjusting comprises 7.
 - processing the one or more logical volumes in a sequence
 - beginning with the outermost logical volume bordering logical
 - volumes serviced by another physical device.
 - The method of claim 7, wherein, for each successive one
 - of the processed logical volumes, the new mirror service policy
 - of an immediate predecessor of the processed logical volumes is
 - used as the current mirror service policy for the cost function
 - analysis. 5
 - 1 The method of claim 2, wherein the threshold value
 - comprises fifty percent. 2
 - A computer program product residing on a computer 10. 1
 - 2 readable medium for optimizing response time of physical devices
 - in a data storage system, comprising instructions for causing a 3
 - computer to: 4
 - 5 collect statistics for each of the physical devices;

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- 6 determine from the statistics the *n* most active of the 7 physical devices;
- 8 for each of the n most active of the physical devices,
- 9 adjust a mirror service policy associated with a mirrored
- 10 logical volume serviced by the physical device to reduce seek
- 11 time.
- 1 11. A data storage system comprising:
- 2 physical devices having mirror logical volumes stored
- 3 thereon;
 - a storage controller for controlling access to the physical devices; and

wherein the storage controller collects for the physical devices statistics including utilization and, for each of n of the most active of the physical devices, adjusts mirror service policy associated with a mirrored logical volume serviced by the physical device to minimize seek time when the utilization is greater than a threshold value.